

In the Claims

1. In a bushing assembly having a plate-like structure including a plurality of orifices for forming fibers from a fluid material, a member for reinforcing the structure, comprising:

a body including a first portion for attachment to the structure and a second portion having a profile with a variable height including at least one apex,

whereby the variable height profile and the at least one apex of the body assists in reinforcing the structure against sagging and extends the service life thereof while minimizing metal usage.

2. The reinforcement member according to claim 1, wherein the body is comprised of a single piece of material.

3. The reinforcement member according to claim 2, wherein the body including the first and second portions has an inverted L-shaped, T-shaped, or F-shaped cross-section.

4. The reinforcement member according to claim 3, wherein the second portion of the body has an arcuate profile, an inverted V-shaped profile, or an inverted W-shaped profile.

5. The reinforcement member according to claim 1, wherein the body

has a length including a midpoint, and wherein the at least one apex is located substantially at the midpoint.

6. The reinforcement member according to claim 1, wherein the bushing assembly includes spaced sidewalls to which a first and second end of the body are secured, respectively, and wherein the at least one apex is located between the spaced sidewalls.

7. The reinforcement member according to claim 1, wherein the body comprises:

a first member defining the first portion for attachment to the structure; and

a second member coupled with the first member, defining the second portion and having the variable height profile with the at least one apex.

8. The reinforcement member according to claim 7, wherein the first member has a T-shape or an inverted L-shape in cross-section.

9. The reinforcement member according to claim 7, wherein the second member has a T-shape or an inverted L-shape in cross-section and is formed from one or more component parts.

10. The reinforcement member according to claim 7, wherein the second portion has an arcuate profile, an inverted V-shaped profile, or an inverted W-shaped profile.

11. The reinforcement member according to claim 7, wherein the second member includes a web having an end that is welded directly to an upper surface of the first member.

12. The reinforcement member according to claim 1, wherein the second portion of the body includes at least two apexes.

13. The reinforcement member according to claim 1, wherein either the first or the second portion of the body includes a plurality of strategically positioned openings, whereby the openings serve to reduce the amount of material required to fabricate the reinforcement member without compromising the strength thereof.

14. A bushing assembly for use in forming a plurality of fibers from a fluid material at an elevated temperature comprising:

a structure having a plurality of orifices through which the fluid material passes to form the fibers;

at least one reinforcement member having a first portion for attachment to the structure and a second portion having a profile with a variable height including at least one apex,

whereby the variable height of the reinforcement member including the at least one apex enhances the resistance of the structure to sagging and extends the service life thereof while minimizing metal usage.

15. The bushing assembly according to claim 14, wherein the fiber forming structure is plate-like, and wherein the at least one reinforcement member extends along a width dimension thereof.

16. The bushing assembly according to claim 15, wherein a plurality of independent, spaced reinforcement members extending along the width of the plate-like structure.

17. The bushing assembly according to claim 16, wherein the fiber-forming structure has an upper surface to which the first portion of each of the reinforcement members is welded.

18. The bushing assembly according to claim 14, wherein the reinforcement member is fabricated from either a single piece of material or at least two pieces of material secured together.

19. The bushing assembly according to claim 14, wherein the structure includes at least one existing gusset, and wherein the second portion of the reinforcement member is attached to the gusset.

20. A method for reinforcing a plate or plate-like structure for forming fibers from a fluid material supplied to a bushing, comprising:

securing at least one reinforcement member to the fiber-forming structure, said reinforcement member comprising a first portion for attachment to the structure and a second portion having a profile with a variable height including at least one apex,

whereby the variable height of the reinforcement member including the at least one apex enhances the resistance of the structure to bending stresses and extends the service life thereof while minimizing metal usage.

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21. The method according to claim 20, wherein the securing step comprises securing a plurality of independent reinforcement members to the fiber-forming structure in a spaced relationship.

22. The method according to claim 20, wherein the reinforcement member comprises a first member including the first portion and a second member including the second portion, and wherein the securing step comprises securing the first member to the fiber forming structure, and securing the second member to the first member.

23. The method according to claim 20, wherein the fiber forming structure includes at least one existing gusset, and said method further includes attaching the first portion of the reinforcement member to the gusset.

24. In a bushing assembly for forming fibers from a fluid material at an elevated temperature using a bushing tip plate having an upper surface and including a plurality of strategically positioned fiber-forming orifices, a reinforcement member, comprising:

a body having a lower portion including a web for attachment to the upper surface of the bushing tip plate and an upper portion coupled with the lower portion, said upper portion having a variable height profile shaped for resisting both a bending stress created partially by the weight of the material and a creep created partially by the elevated temperature of the material over time in combination with the bending stress, said profile including at least one apex,

whereby the profile of the body including the at least one apex

enhances the resistance of the bushing tip plate to sagging and thereby substantially extends the service life thereof while minimizing metal usage.

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